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(11)

EP 0 723 915 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
31.07.1996 Bulletin 1996/31

(51) Int. Cl.<sup>6</sup>: B65B 31/02

(21) Application number: 96100750.7

(22) Date of filing: 19.01.1996

(84) Designated Contracting States:  
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL  
PT SE

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(30) Priority: 27.01.1995 IT MI950048 U

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### (54) Device for the packing under vacuum of products contained in flexible bags

(57) Device for the packing under vacuum of products contained in flexible bags in plastic material, where means are provided suitable to create, around the opening of the bag, an airtight chamber connected to air suction devices, being provided welding devices suitable to

weld the bag walls along a line beyond said chamber, in order to seal the bag after creating the vacuum inside it through said suction means.

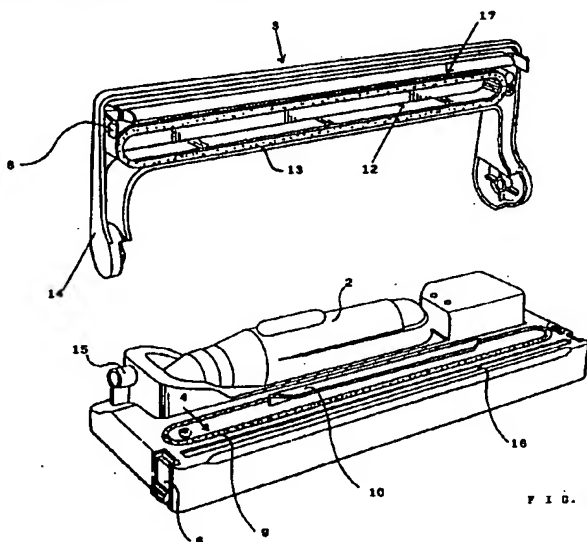


FIG. 2

EP 0 723 915 A1

## Description

This innovation proposes a device for the packing under vacuum of products contained in flexible bags, in particular in bags of plastic material, that includes means suitable to define, around the opening of the bag, an airtight chamber connected to devices for the suction of the air and means suitable to weld the walls of the bag along a line beyond this airtight chamber, in order to seal the bag after creating the vacuum inside it.

It is in particular a device conceived for home use and it is provided to be used in union with a suction device for the creation of the vacuum inside containers shown in the European patent application no 510360.

This patent includes a group engine-pump and the related feeding batteries located inside one covering, which is on its turn provided with a metal point that allows to connect it with receptacles provided with an airtight valve in order to suck air from inside and create in this way the vacuum.

The aspirator is not the subject of the invention, so that a detailed description of it is needless, as it can be found in the above mentioned European patent application.

The device according to the innovation has little dimensions, is easy to use and is extremely handy and practical to use, as it allows to create the vacuum inside bags and then seal them with few simple operations.

Many techniques are known for the preservation of products, in particular foodstuffs, and among them the use of vacuum is particularly advantageous.

For this purpose, foodstuffs are introduced into containers or bags, where vacuum is created, and afterwards they are sealed with different techniques.

At present this preservation technique under vacuum is limited to industrial use, as the devices that allow to suck the air from containers and then seal them are complex, expensive, with great dimensions and suitable only for specific industrial use.

Also devices are known which are used for sealing bags in plastic material. They include a warmed blade, for instance by means of an electric resistance, through which the two opposite walls of the bags are sealed in order to close them.

This innovation refers now to this field and proposes a device conceived in particular for home use, which allows both to create vacuum inside soft bags, in particular bags in plastic material, and to seal them, welding their walls near the open edge.

The device, to be used in union with a suction device, preferably a device of the type described in the European patent application no 510360, is provided with means suitable to create, around the opening of the bag, an airtight chamber connected to this suction device and provided with means for sealing suitable to weld the walls of the bag along a line beyond said chamber, in order to seal the bag in correspondence of the opening after creating the vacuum inside it.

This innovation is now described in details, with reference to the enclosed figures, where:

- figure 1 represents, schematically, the device, in perspective view, with the mobile element in closed position;
- figure 2 represents the device in perspective view, with the mobile element lifted superiorly to the base structure;
- figure 3 represents the device in perspective view, with the mobile element in a separated view;
- figure 4 represents the device, laterally raised and partially in section;
- figure 5 shows, schematically, the connection of the vacuum generator with the chamber, where the opening of the bag to be packed under vacuum is placed;
- figure 6 represents the use of the vacuum generator in order to carry out the packing with a container provided with a valve for the air extraction;
- figure 8 represents a bag that can be used for the packing under vacuum of products by means of the device according to this innovation.

With reference to figures 1 and 2, the device according to the innovation includes a base 1 where a seat is obtained in order to house, in a removable way, a suction device 2, for instance of the type described in the European patent application no 510360, base where a closing cover is fastened, shown in the whole with 3.

Between the base 1 and the cover 3, the opening of the bag to seal is tightened, inside which first the vacuum is created in the way described below.

The bags to be used are bags of known type, that present, in correspondence of the opening, wrinkled walls or that are anyway provided with a plurality of micro-ribs that allow the air to go through and to be sucked also when the bag walls are pressed one against the other.

In the base 1 (figures 2 and 3) a chamber is obtained, shown with 4, where a duct 5 ends. This duct is connected, on the opposite end, to a connection where the metal point of the suction device 2 is inserted.

The aspirator pump, consequently, is connected, through the duct 5, with the inside of chamber 4.

On the duct 5 (figure 5) also a valve 6 is inserted that allow to put the duct in communication with the outside and that is preferably set in action by a push-button 7, located on the side of base 1 and used also to engage a tooth 8 of the cover 3, in order to block it in closed position against base 1.

At the base 1, in correspondence of the edge of chamber 4, an airtight gasket 9 in plastic material is applied.

To the base structure 1, inside the chamber 4, also a wall 10 is fixed, which is intended to act as a striker for the correct positioning of the edge of the bags to be

sealed, wall 10 that protrudes superiorly from chamber 4 at a certain distance from the balls of said chamber.

In the cover 3 a chamber 12 is obtained, in a position correspondent to the position of chamber 4, so that, when the cover is closed, the striker wall 10 is inside the area defined by chambers 4 and 12.

Also to the lower edge of chamber 12 a gasket in soft material 13 is applied, that fits together with the gasket 9 when the cover is closed.

The cover is provided with a pair of arms 14 with a shape that allows to insert them, through elastic deformation, around the correspondent pins 15 provided on the base so as to allow the cover to rotate around a substantially horizontal axis for the closure and the opening of it.

According to a possible preferred configuration, suitable to improve the characteristics of compactness of the device, the cover affects only the area of the base that is not occupied by the suction device 2 and the arms 14 are inserted around the seat where this suction device is located.

Always in the base 1 a warming element 16 is located which is formed, for instance, by a blade inside which there is an electric resistance that has the purpose to supply the necessary heat to weld the bag.

In the cover 3, in a position correspondent to the position of the welding blade 16, there is a pressing member 17 built for instance with a bar in a sufficiently rigid material, possibly but not necessarily mounted in its own seat with the interposition of elastic means suitable to exert a controlled pressure of the bag walls against the welding blade 16 when the cover 3 is closed on the base 1.

The use occurs as follow:

once the device with the suction device is prepared in the appropriate seat, the bag to be sealed is put with the open edge in correspondence of the inner area of chamber 4, placing the edge of the bag against the striker wall 10.

At this point the cover is closed with the gasket 13 that leans against the gasket 9, blocking in this way, elastically, with a predefined strength, the walls of the bag one against the other.

At the room temperature the wrinkling or the ribs near the edge of the bag avoid that the bag walls get in narrow contact on the whole surface, allowing in this way the air to filter from inside to outside or viceversa.

The teeth 8 of the cover 3 are engaged by the push-buttons 7 keeping the cover blocked in closed position. It is now possible to set in action the suction device 2.

This latter, through the duct 5 and the valve 6, sucks air from the area limited by chambers 4 and 12 and the depression created causes the air inside the bag to go out through the little openings produced by the wrinkling or ribs on the bag walls.

Once that in the chambers 4 and 12 and then inside the bag a depression is created and then a sufficient vacuum degree, the resistance located in the warming blade 16 is fed and causes the fusion of the bag walls in correspondence of a line located near the edge, sealing it perfectly.

At the end of the operation, that in case can be controlled by a timer or similar, it is sufficient to press the push-buttons 7 to release the cover and at the same time set the valve 6 in action so that the outer air can penetrate into chambers 4 and 12 and reestablish the room pressure.

It is now possible to extract the sealed bag, from the inside of which the air was completely removed.

The suction device 2 can, if necessary, be removed to be, in case, used also to create the vacuum inside containers of other types.

Different execution forms of the same solution idea could be provided. For instance, the hinges to connect the cover to the base or the means for hooking to block it in closed position could vary without exiting the protection scope of the innovation.

Also dimensions, as well as used materials, could vary according to the requirements of the use.

#### Claims

1. Device for the packing under vacuum of products contained in flexible bags, in particular in bags in plastic material, that present near the openings wrinkled walls or walls provided with micro-ribs, suitable to allow the passage of air when the walls are pressed one against the other, characterized by the fact that means are provided suitable to create around the bag opening an airtight chamber connected to air suction devices, being provided welding devices suitable to weld the bag walls along a line beyond said chamber, in order to seal the bag after creating the vacuum inside it by said suction means.
2. Device according to claim 1, including a base, a cover to be closed against said base, where said airtight chamber is obtained partially in the base and partially in the cover, being provided in correspondence of the opposite edges of said parts of the airtight chamber, gaskets in soft material, suitable to block, elastically deforming, the walls of a bag put between said base and said cover, with the opening inside said airtight chamber.
3. Device according to claims 1 and 2, characterized by the fact that a striker wall is provided in said airtight chamber in order to facilitate the positioning of the bag.
4. Device according to claims 1 and 2, characterized by the fact that said airtight chamber and said weld-

ing means have a length greater than the width of the bags to be sealed.

5. Device according to one of the previous claims, characterized by the fact that in the cover a pressing element suitable to press the bag walls against said welding element is provided. 5
6. Device according to claim 5, where said pressing element is mounted on elastic supports. 10
7. Device according to one of the previous claims characterized by the fact that a duct is provided that connects the suction means to said airtight chamber, a no-return valve, being provided means suitable to put in communication said duct with the environment, said means being set in action by the same push-button used for the release of the cover in order to allow the opening of the device. 15

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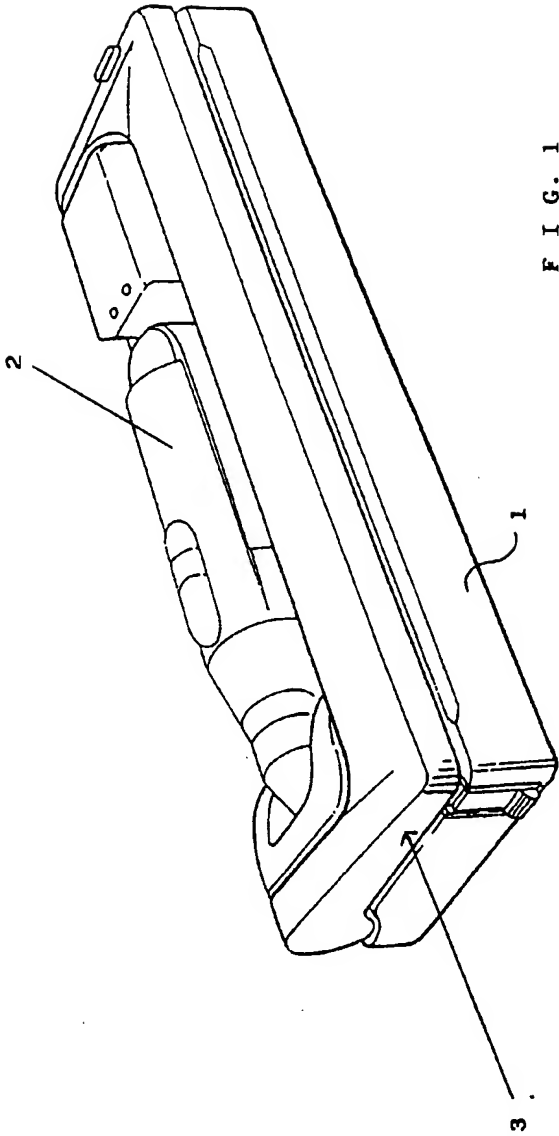


FIG. 1

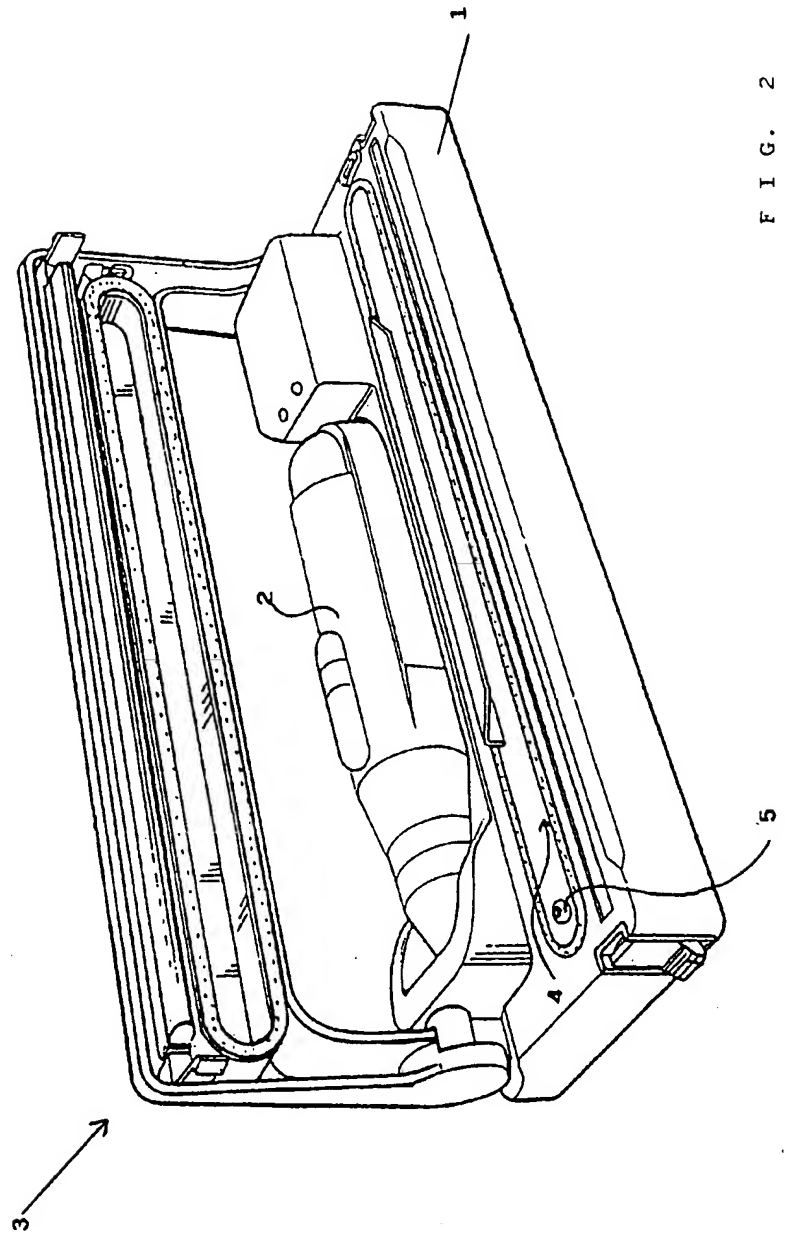
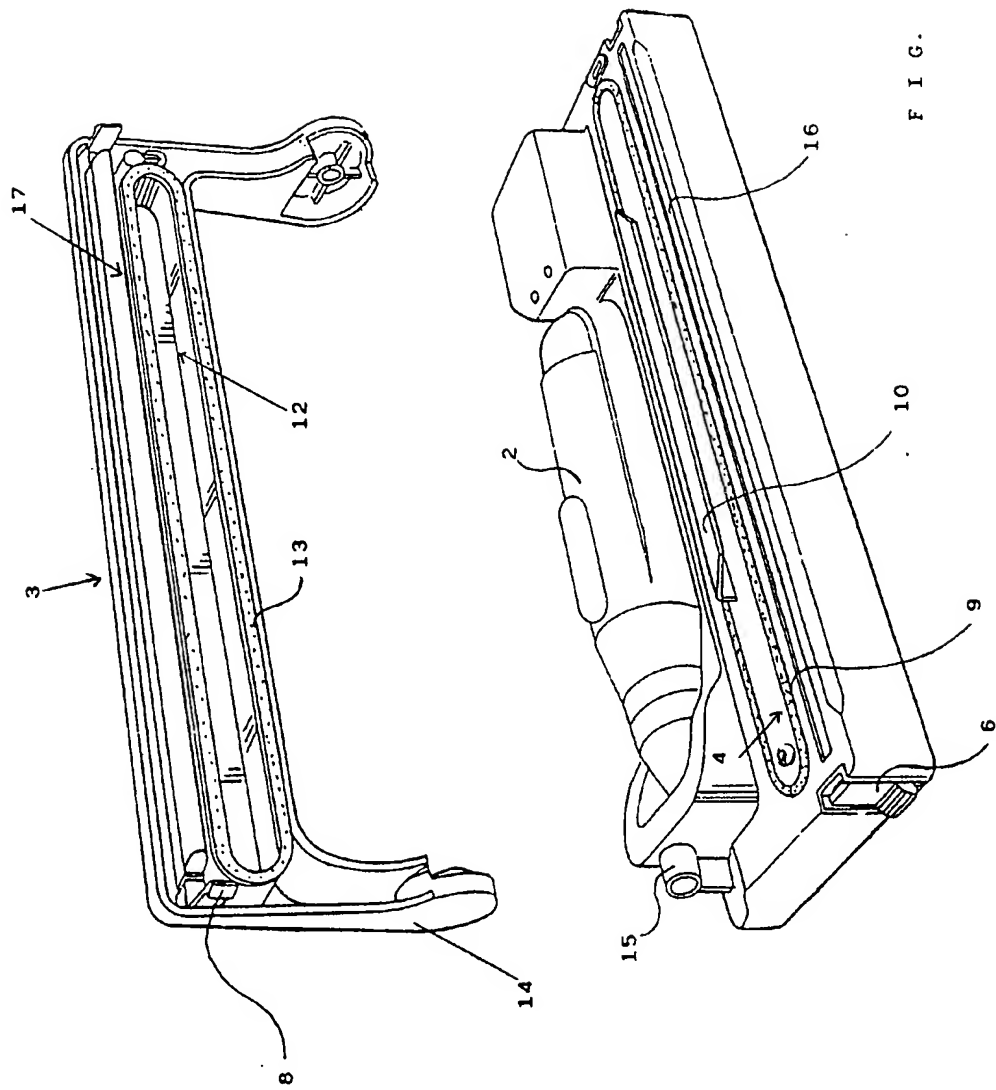


FIG. 2



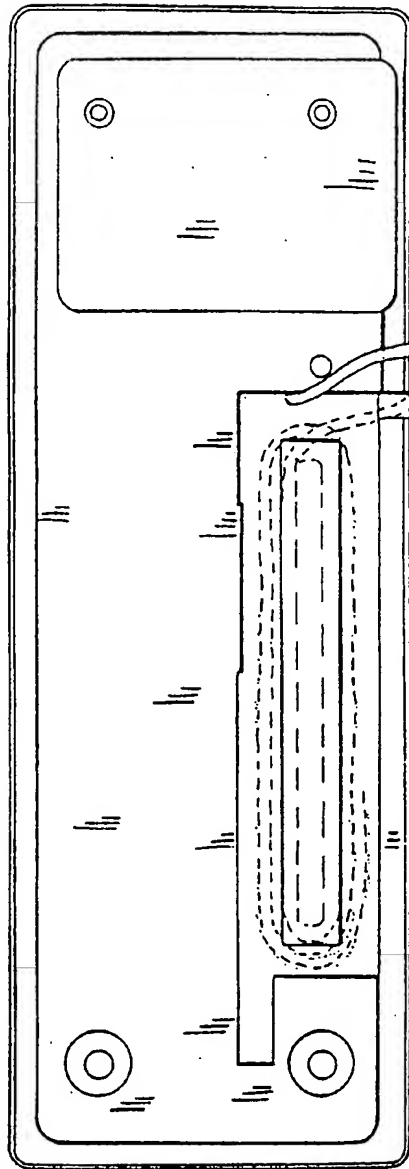


FIG. 6

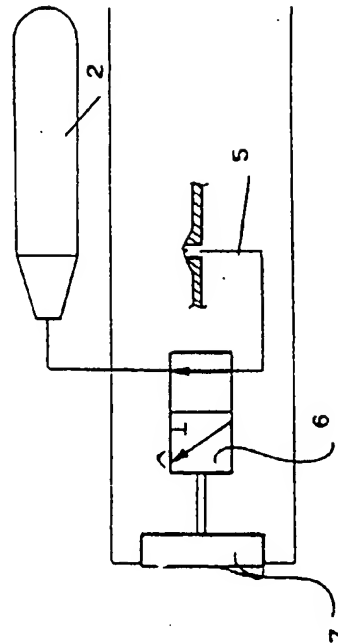
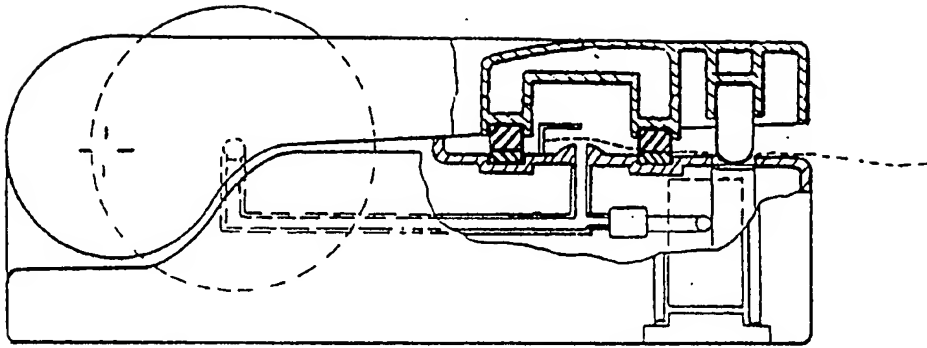
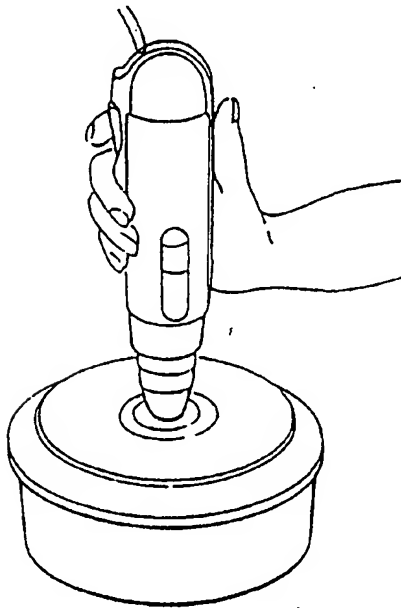


FIG. 5

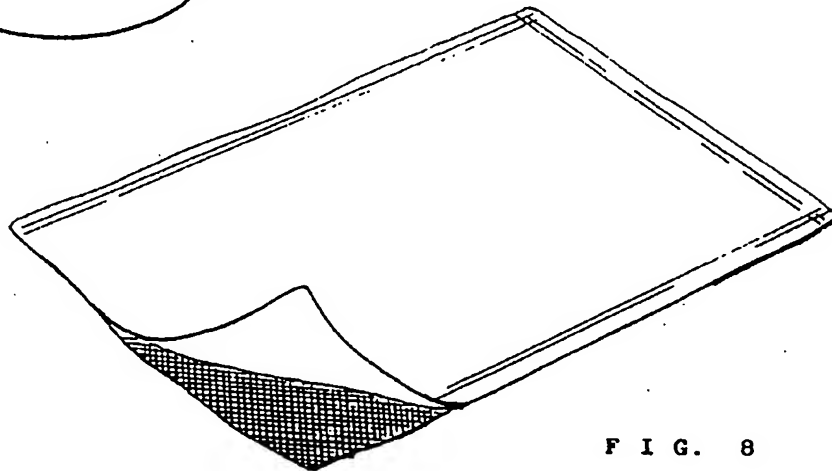




F I G. 4



F I G. 7



F I G. 8



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## EUROPEAN SEARCH REPORT

Application Number  
EP 96 10 0750

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	US-A-4 941 310 (KRISTEN) * abstract * * column 4, line 37 - column 6, line 9; figures 1,5-10 * ---	1,2,4-6 7	B65B31/02
X A	US-A-2 778 171 (TAUNTON) * column 3, line 57 - column 4, line 20; figure 14 * ---	1 7	
Y		5,6	
Y	DE-A-32 03 951 (DUCKE) * page 7, line 33 - page 8, line 13; figures 1,4 * -----	5,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 April 1996	Examiner Claeys, H
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : number of the same patent family, corresponding document</p>			

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